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ESTUDIOS / RESEARCH STUDIES

The impact of the economic crisis on Spanish university libraries

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Abstract: The scope of this study is to examine the impact of the financial crisis on the libraries of Spanish public universities. For this purpose, data from staff, finances, and services provided by the 47 public university libraries during 2008-2014 have been analyzed. Overall, the analysis of the data leads us to assert the following observations: these libraries have experienced a reduction in staff and expenditures for the purchase of information resources, whereas the volume of library lending has matched the evolution of student enrollment. Both interlibrary lending and the number of days that libraries were open during this period have decreased. Expenditures on electronic resources made by libraries and library consortia have increased in the period under study to the detriment of expenditures on monographs and printed journals. In this new economic environment, we consider that library managers should design actions for establishing strategies to ensure efficient and high-quality services to users.

Keywords: University libraries; economic recession; Spanish universities; financing libraries; library expenditure.

Impacto de la crisis económica en las bibliotecas universitarias españolas

Resumen: El presente trabajo tiene como objetivo examinar el impacto de la crisis financiera en las bibliotecas de las universidades públicas españolas. Para alcanzar este propósito se han analizado los datos de personal, los datos económicos, y los referidos a los servicios prestados por las 47 bibliotecas universitarias públicas durante el periodo 2008 a 2014. El análisis de los datos nos lleva a aseverar, a nivel global, las siguientes consideraciones: estas bibliotecas han experimentado una reducción en los efectivos de personal y en los gastos de adquisiciones de recursos de información, mientras que el volumen del préstamo domiciliario ha seguido una evolución similar al del número de estudiantes matriculados. Tanto el préstamo interbibliotecario como el número de días que permanecieron abiertas las bibliotecas durante estos años también han disminuido. El gasto en recursos electrónicos, realizado por las bibliotecas y los consorcios bibliotecarios, se ha incrementado en el periodo estudiado a expensas del gasto en monografías y en revistas en soporte papel. En este nuevo entorno económico, consideramos que los gestores bibliotecarios deben diseñar acciones orientadas al establecimiento de estrategias que aseguren una oferta de servicios eficientes y de calidad para los usuarios.

Palabras clave: Bibliotecas universitarias; crisis económica; universidad española; financiación bibliotecas; gasto bibliotecario.

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1. INTRODUCTION

As a result of the world financial crisis, since the second quarter of 2008, Spain has experienced what economists have called the Big Recession (Bandrés and Gadea, 2013). This period has persisted in time, affecting the Autonomous Communities (ACs), which had their expenditures reduced by more than 20% on average between 2010 and 2012 (Lago Peñas and Fernández Leiceaga, 2013). This crisis situation has also been reflected in Spanish public universities, which experienced a 16% reduction in funding during the 2008-2014 period, according to data from the European University Association Observatory (2014). However, this funding reduction has not been homogeneous and has depended on the education and financial policies of each regional government.

In response to this context of general recession, both central and regional governments have initiated a series of actions with negative impacts on the operation of public universities, among which the following can be highlighted:

- In May 2010, five thousand million euros were cut from social public expenditures. Amid the items cut, there was a 5% reduction on average in staff salaries.
- The General State Budgets approved for the year 2012 established a 13.4 thousands million euros cut in public expenditures. Subsequently, on April 9, there was an additional 10 thousands million reduction, split between Education (3 thousand million) and Health (7 thousand million).
- The Organic Law 2/2012 of Budgetary Stability and Financial Sustainability was published on April 27, forcing universities to conform to the principles of budgetary stability and financial sustainability.
- The Royal Decree-Law 14/2012 of April 20 contained an urgent measure for public expenditure rationalization in the area of education. This decree included, among other things, the following measures:
 - Universities were urged to approve a maximum annual expenditure limit, with no possibility to exceed such limit.
 - Budgets and their executions should make explicit reference to their compliance with financial equilibrium and sustainability.
 - In the case of budget execution with a negative cash carry over, the Social

Council will have the power to compel the university to reduce it to the same extent as the deficit produced. This action should occur in the first session addressing expenditure reduction in the new budget. In this sense, it is important to note that transfers to universities charged to the budgets of an Autonomous Community require the approval and commencement of expenditure reduction.

- Increasing public undergraduate and master program fees.
- Staff costs should be authorized by the Autonomous Community. Appointments of interim staff and temporary staff to work in universities should comply with basic state regulations on the matter.

These measures were approved, and more measures related to the reduction of replacement rates for staff were added. Before 2010, it was 100 per 100, but from that year on, it was reduced by 10 per 100 per year through the year 2015, when it was set at 50%.

In Spain, the first direct mention of the economic crises in the university libraries context is found in the 2009 Memory of the Consortium of Catalonia University Libraries (Consortio de Bibliotecas Universitarias de Cataluña - CBUC). In this document, economic sustainability for the Catalan Digital Library is introduced as one of the challenges for the future, including the increase in product prices and the crisis situation. Its core concept is that the economic crisis has a negative impact on library funding. Gutiérrez Santana et al. (2010) agree with this premise, indicating that 33% of those in charge of university libraries in Andalusia already had their budgets reduced by the year 2010. This crisis environment has also impacted public libraries, as observed in the studies by Arroyo-Vazquez et al. (2011) and Villoldo et al. (2011), who pointed to the relative stagnation of the economic provisions assigned to Spanish libraries in 2010, which consequently had obvious reductions in funding. Indeed, only the libraries of higher education institutions preserved their funding in 2010, with a slight 2.2% increase with respect to 2008. Merlo Vega (2012) and Pérez-Salmerón (2014) describe the actions undertaken by Spanish libraries to preserve librarian services during the recession period. Similarly, Fernández and Rubio (2013), studying the relationship between the library budget and research productivity at the Polytechnic University of Valencia, indicate that the average budget assigned by university libraries to acquire information resources began to decline in

2010. Hernández-Sánchez and Arroyo-Vázquez (2014) hold the same position in a study that included all Spanish public libraries, highlighting the fact that the economic crisis in Spain has produced a reduction in acquisition expenditures, a decline in service sites, and staff shortages.

The consequences of this economic recession in Spanish university libraries have been clearly stated in the V BUCLE conference held on September 20-21, 2012. Among its conclusions, the following can be highlighted:

- The crisis is jeopardizing access to scientific information, with an impact on research results.
- As librarians, we have to cope with collection resizing, which should be oriented toward the actual use of the collection's contents. Only the preservation of collections suited to our researchers' needs will allow us to have economically sustainable library services. Continuing with an inflationary model based on exponential and unlimited content growth is no longer possible.

In the international context, the first documented reference regarding the impact of the economic crisis on university libraries was the publication of the findings of a survey of 886 librarians from different countries attending the Charleston Library Conference held in 2008. There, participants were required to reveal their opinions on the effect of the recession on their own libraries. The results indicated that 33.4% of university librarians stated their beliefs that budget cuts will be extended, at least to the year 2012 (Nicholas et al., 2010). In the US, Guarria (2011), in a study conducted on 1,442 university libraries, found that by 2009, 33.2% had already their budget reduced, with the number increasing to 43.7% in 2010. The same year, Guarria and Wang (2011) presented numerous examples of the effects of cuts on university library funding in the US.

Regarding Europe, Greece has been the country where the effects of this crisis have been the worst, with a negative impact on the operation of university libraries. Studies conducted by Kostagiolas and Margiola (2011) and Kostagiolas et al. (2013) reveal that the increase in the funding of university libraries implemented up to 2009 due to grants from the European Union was dramatically reduced during the 2010-2012 period by 50% for operational expenditures and 20% for staff expenditures. Giannakopoulos et al. (2014) indicate that in 2013, 85.2% of Greek university libraries had their funding reduced, producing an outcome that translated into the reduction

of information resources and maintenance expenditures and investments. Additionally, 79.1% of librarians considered the most negative effect of the crisis to be in the area of staff, with salary reductions, layoffs, and unfilled vacancies.

Ireland is another European country greatly affected by the economic crisis in the university library sector, with a 9% forced reduction in university staff during the 2008-2011 period and a 15% decline in the purchases of information resources (Cox, 2010a, 2010b).

Since 2009, British university libraries have experienced funding reductions in digital format journal purchases due to the depreciation of the pound against the euro and dollar, with effects in collection development (JISC, 2009; Kid, 2010; Harper and Corral, 2011). Similarly, Harper and Corral (2011) note a significant reduction in librarian staff funding.

In the Netherlands, funding cuts in public libraries started in 2009 (Nijboer, 2010), with a 6%-10% reduction in the following years, causing a decline in library staff in the libraries of the country's main cities.

Librarian consortia have also suffered impacts from the economic recession, as publicly acknowledged by the International Coalition of Library Consortia (ICOLC) in its declaration "The Global Economic Crisis and its Impact on Consortia Licenses" in January 2009 and again in June 2010. This declaration indicates that budgetary cuts to libraries and consortia would not be sporadic but significant, widespread, and lasting. Several proposals intended for consortia and publishers to preserve information context as much as possible are suggested in this declaration.

In Spain, the five university library consortia, two library associations, and the Spanish National Research Council Archive and Library Network initiated a consortium board in 2014, to coordinate a common strategy to negotiate with large journal publishers. In a document released by the board in 2015, this effort was highly commended, and the document specified in detail some of the strategies intended by the parties to negotiate with the large publishers.

In short, this period of recession has produced diverse effects: on one hand, a salary cut and, on the other hand, a dramatic reduction in funding both for the purchase of information resources and to meet operational expenses. In addition to the previous effects, there is the position of the large groups of journal and electronic resource publishers, which, despite the economic context, have continued to raise their prices.

In response to this contextual change, libraries have developed several strategies to maintain the same level and quality of service provision. The proposals that libraries have formulated can be classified into three major categories: first, those suggesting that the key is in librarians' professional development as a crucial factor for any change in strategy (Guarria and Wang, 2011; Varela Pardo and Baiget, 2012; Giannakopoulos et al., 2014); second, those holding that the key is to make their social role more visible and to establish links with society (Lloret Romero, 2011); and, third, those proposing the establishment of improvements at the level of resource management to face the cuts to funding for the purchasing of information resources in both the medium term and the long term. Kostagiolas et al. (2013) perform an excellent literature review on the different proposals from different researchers. Among them, and because of their potential application to the Spanish context, the following are worth highlighting:

- Optimizing the potential purchasing capacity through consortium conformation and realistic negotiation with providers.
- Library collaboration for the sharing of highly specialized information resources.
- Better exploitation of the information provided by analysis of the use of electronic publications databases and information packages with a high reoccurrence rate of periodic publications to improve decisions on subscription renewal. To this, it should be added that it would be key to take into account the opinion of interest groups regarding such decisions.
- Enhancing the use of open access resources.
- Reviewing and improving internal processes and, in collaboration with interest groups, redesigning new, more efficient methods for providing services.
- Establishing improvement programs for the efficient use of resources, such as computers, paper, energy, outsourcing, etc.

In the Spanish environment, the effort undertaken by several institutions to establish the relevance of libraries for society should be noted (Pérez-Salmerón, 2014).

In this paper, we first intend to identify and quantify the effect of the economic recession on Spanish public university libraries regarding the following parameters:

- Staffing.
- Expenditures on information resources.

- The volume of bibliographic material purchased.
- Library services, estimated through the volume of loan services and interlibrary loan requests and the number of days that libraries are open annually.

These data were compared with the effects of the economic crisis on funding, staffing, and the number of students enrolled in Spanish public universities.

Lastly, proposals made by Spanish university libraries to mitigate the effects of the economic recession were analyzed.

2. METHODOLOGY

This study takes the 47 Spanish public universities as reference. We should clarify that only on-site universities were considered. The library data used in this study have been collected from yearly statistical reports published by the University Libraries Network (Red de Bibliotecas Universitarias - REBIUN) corresponding to the years 2008 to 2014. With the aim of improving the data contained in this statistical network, we have first considered their yearly evolution to verify that there were no inconsistent figures in the series. Second, we have compared the data from REBIUN to the data collected from the different library reports, although we must note that this last approximation was conducted in only 25 cases of the total analyzed, given that they were the libraries with yearly activity reports. Lastly, data on expenditures have been verified in some occasions against the data collected in the universities' budget executions.

For librarian consortia, we considered it convenient to use the expenses incurred during the 2008-2013 period corresponding to the purchase of electronic resources. We obtained the data from the following sources:

- The Consortium of Galician University Libraries (Bugalicia). Data provided by Bugalicia.
- The Catalan University Libraries Consortium (Consorcio de Bibliotecas Universitarias de Catalunya - CCUC). Data obtained from its yearly activity reports and verified against the budgets approved annually by the Government of Catalonia
- The Andalusia University Libraries Consortium (Consorcio de Bibliotecas Universitarias de Andalucía - CBUA). Data obtained from its resource evaluation yearly reports.

- The Madrid University Libraries Consortium (Consortio de Bibliotecas Universitarias de Madrid - MADROÑO). Data officially provided by one of the consortium members.
- Regarding the Castilla León University Libraries Consortium (Consortio de Bibliotecas Universitarias de Castilla León - BUCLE). Consortium management has refused to provide data on its expenditures on information resources.

Regarding the universities, the data presented in this paper come from the following sources:

- Data on university approved budgets were collected from the universities' webpages and Autonomous Law Gazette.
- Data on the university staff were obtained from the series *Statistics on staff serving at universities*, published by the Ministry of Education, Culture, and Sports.
- Data on the number of students were obtained from the series *Statistics on students*, published by the Ministry of Education, Culture, and Sports.
- The data on university financial accounts come from the series *Statistics on Spanish public university funding and expenditures*, which registers the evolution from 2009 to 2012, prepared by the Ministry of Education, Culture, and Sports. For 2008, the publication *Spanish Universities in numbers* (2010), by the Spanish University Council of Chancellors (Consejo de Rectores de las Universidades Españolas - CRUE, 2010), was used.

The measures adopted by libraries to face this period of crisis were obtained from two sources: their yearly library reports and the strategic planning documents found on their webpages.

3. RESULTS

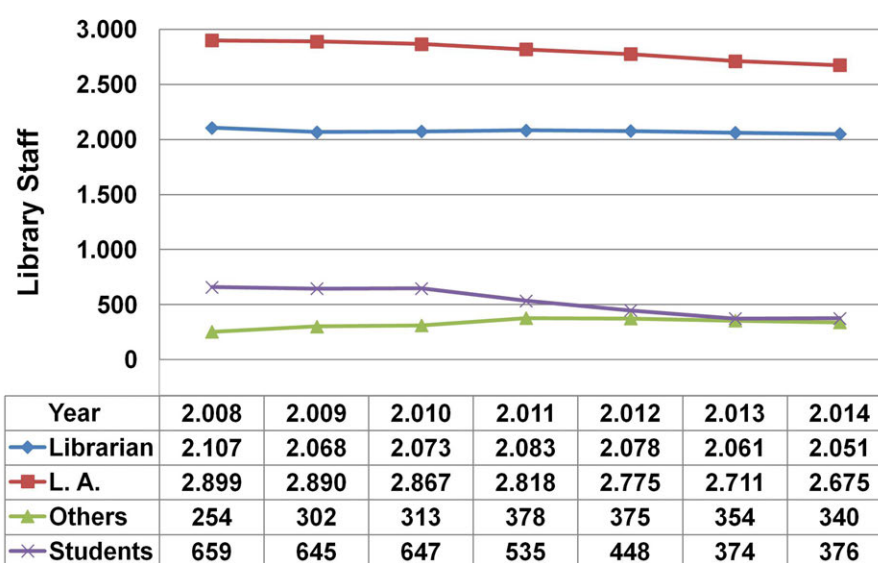
3.1. The evolution of staffing in Spanish university libraries

Figure 1 shows that the evolution of staff varies according to professional categories. The number of librarians and assistants has been progressively declining in the period between 2008 and 2014, ultimately resulting in a reduction of 2.7% for librarians and 7.2% for assistants. Regarding the category of "other staff", which comprises the clerical and specialized staff, should be highlighted a 33.9% increase in the period under study. Finally, the number of scholarships (standardized to full-time) registers a 42.9% reduction.

In absolute numbers, from 2008 to 2014, there was a net reduction of 477 personnel, with 56 being librarians, 224 assistants, and 283 students. Simultaneously, there was a reduction of 86 people in the category "other staff". Altogether, the permanent staff was reduced to 194 people, corresponding to 3.89% of the total number of personnel in 2008.

In the same period, this percentage is lower than the reduction in the teaching and research staff (4.4%) and similar to the reduction in managerial and service positions (3.97) at universities, as shown in the data presented in Table I.

Figure 1. Evolution of staffing in Spanish public university libraries



L. A.: Library Assistant.

Table I. Evolution of staffing in on-site Spanish public universities

Year	Teaching and research staff			Services and managerial staff		
	Total	Permanent*	Contracted**	Total	Administrative	Non-Administrative
2008/09	97.303	50.208	47.095	50.349	29.353	20.996
2009/10	99.203	50.098	49.105	52.083	30.625	21.458
2010/11	98.930	48.673	50.257	51.404	30.842	20.562
2011/12	97.662	48.267	49.395	50.663	30.835	20.428
2012/13	94.508	47.667	46.879	49.508	30.481	19.027
2013/14	93.000	46.348	46.040	48.351	30.060	17.990
%2013/08	-4.44	-7.7	-2.2	-3.97	2.4	-14.3

Sources: Statistics on university staffing (Ministry of Education, Culture, and Sports). Data from december in the first year of the period. (Permanent* include: Catedráticos and Titulares). (Contracted** include: Associated, Doctor Contracted and others)

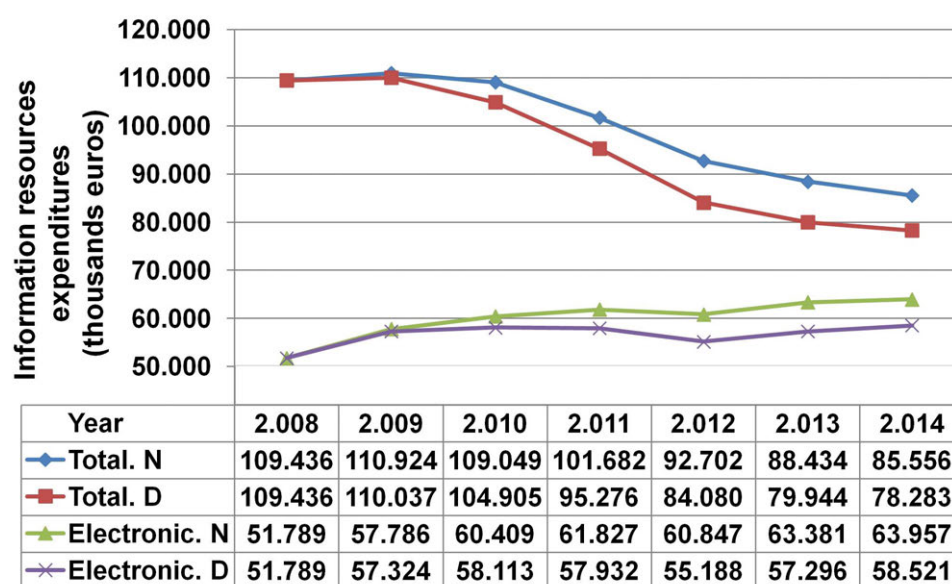
3.2. The evolution of funding for the purchase of bibliographic material

Figure 2 shows the evolution of library expenditures on bibliographic material purchases. Evidently, the total expenditures of university libraries increased in the year 2009 to decline afterward, both in constant euros (taking 2008 as reference) and in current euros, becoming more manifest starting in 2012.

This reduction in total expenditures of 21.82% in current euros and 28.47% in constant euros is coupled with a restructuring; thus, expenditures on

electronic format purchases grew in this period (see Figure 2), both at the nominal level (23.49%) and in constant euros (13.0%), to the extent that the percentage of electronic materials against the total went from 47.3% in the year 2008 to 74.7% in 2014.

In particular, this reduction in bibliographic product expenditures was uneven, given that it varied from a 10% increase to a 52% reduction at different libraries. This percentage difference depends on the Autonomous Community (AC) to which the university belongs. Figure 3 shows that university libraries situated in La Rioja, Asturias,

Figure 2. Library expenditures on information resources

Total. N: total expenditures in current euros. Total. D: total expenditures in constant euros. Electronic. N: expenditures on electronic resources in current euros. Electronic. D: same but in constant euros.

Madrid, Extremadura, Castilla-La Mancha, and Galicia ACs altogether experienced a reduction of more than 25%. By contrast, the university libraries in the País Vasco, Valencia, and Castilla y León ACs had a decrease of less than 15%.

Comparing the data from information resources expenditures against the data presented by public university budgets, we can observe the following facts (see Figure 4):

- First, the initial university budget increased up to the year 2010 and then started decreasing in 2011. This behavior is similar to the library expenditures on information resources. However, when we examine revenue recognition, that is, the real university income, we observe their downward trend starting in 2010.
- Second, the reduction in universities' initial budget global numbers from 2008 to 2014 in current euros was 9.4%. When the variation in the Consumer Price Index (CPI) is taken into account, the reduction reached 17.4%, a lower value than the reduction rate for bibliographic material expenditures.

- Third, as shown in Figure 4, the data from the approved 2015 budget show a slight change in the trend, with a growth of 1.7% compared to the previous year.
- Fourth, it should be emphasized that revenue recognition, or real university income, began to decline in 2010. These actual income values were very close to the income budgets approved by universities starting in 2012, when universities were forced to generate balanced budgets.

The reduction in university funding in this period was largely due to the reduction of AC subsidies for current expenditures. According to the data on the last budget execution published by the Ministry of Education, Culture, and Sports, in the 2008-2013 period, there was a decrease in the volume of subsidies of nearly 1.02 thousands million euros (15.8%), which was only partially compensated for with 300 million euros coming from the increase in registration fees, which is very similar to the numbers in the study conducted by Hernández Armenteros and Pérez García (2015) for the 2010-2013 period.

Figure 3. Percentage of reduction on average expenditures in current euros on bibliographic material during the 2008-2014 period by university libraries according to their regional location

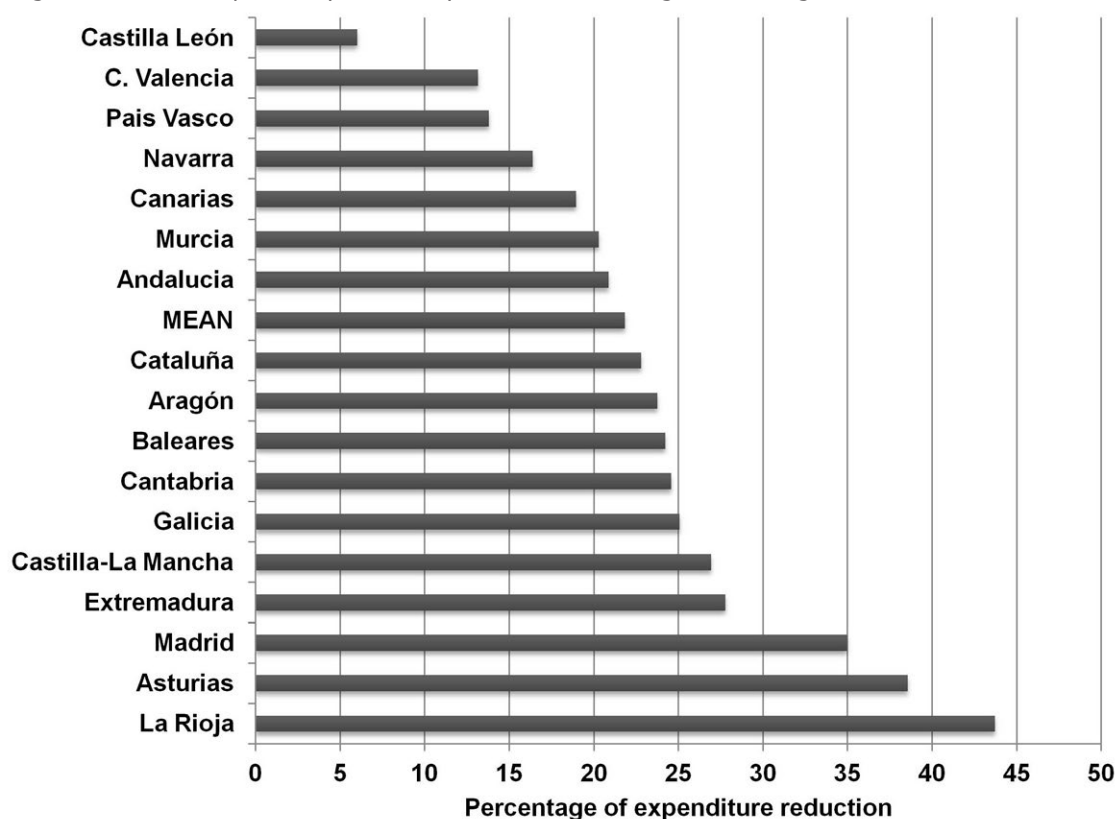
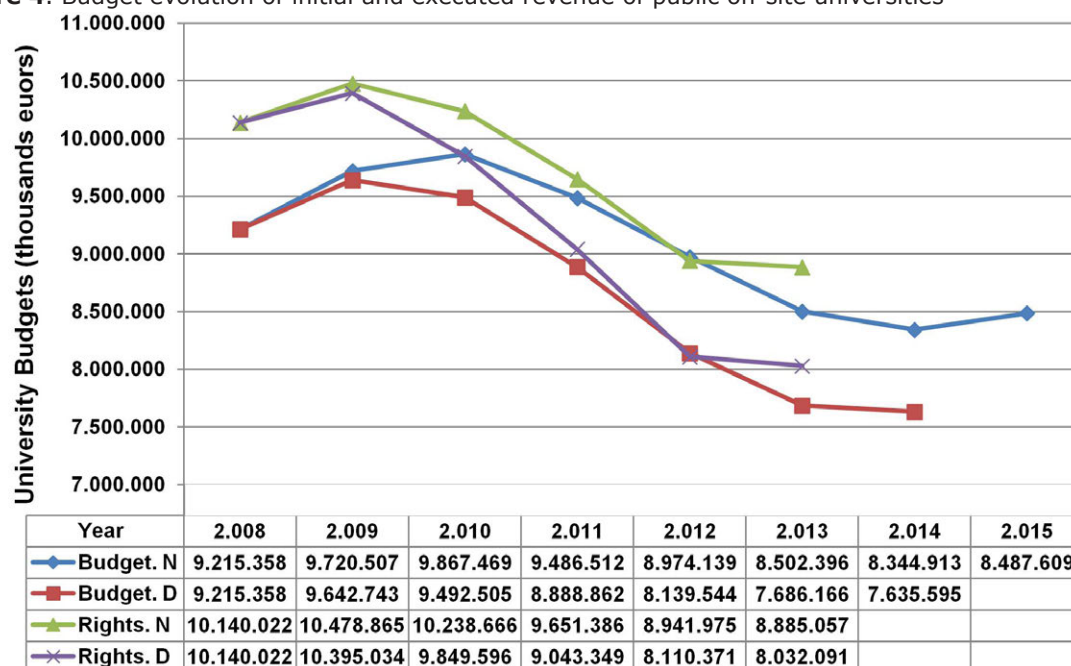
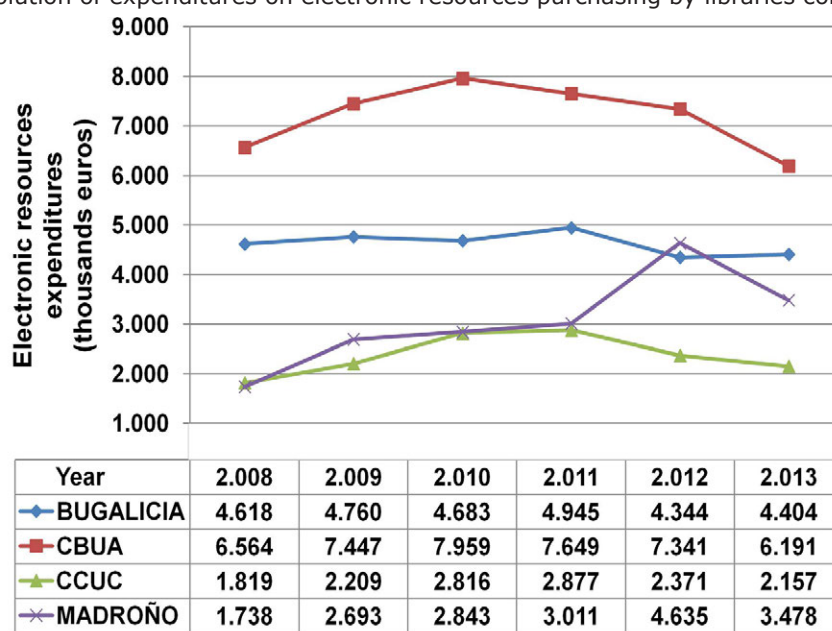


Figure 4. Budget evolution of initial and executed revenue of public on-site universities


3.3. The evolution of consortia funding

In Spain, there are five university library consortia and two library associations that were created to consolidate the purchase of information resources. Figure 5 shows that expenditures by the library consortia on electronic resources started to decline in 2011. However, this decline was not the

same for each of the consortia; the consortium of Catalan universities had the largest reduction. Nevertheless, it should be noted that the Madroño Consortium shows a different trend during that period, experiencing an increase in expenditures in the year 2012. That year, the Madrid AC reduced the subsidies for the abovementioned consortium by half.

Figure 5. Evolution of expenditures on electronic resources purchasing by libraries consortia


BUGALICIA: The Consortium of Galician University Libraries. CBUA: The Andalusia University Libraries Consortium. CCUC: The Catalan University Libraries Consortium. MADROÑO: The Madrid University Libraries Consortium.

3.4. The evolution of bibliographic material purchase

3.4.1. Printed information resources

Figure 6 shows the number of monographs and printed journals purchased in the 2008-2014 period. The most relevant information is the continuous reduction in the number of issues purchased by libraries starting in 2008. As a result, there was a reduction of 47.0% for monographs and 52.8% for printed journals. This result matches the reduction in total information resources expenditures produced in that same period.

3.4.2. Electronic information resources

Figure 7 shows the evolution of the number of electronic monographs and journals purchased during the 2008-2014 period. The 131.3% increase in electronic book purchases in 2014 compared to 2008 is noteworthy, in addition to the 44.9% increase in electronic journals.

3.5. The evolution of the volume of services provided by libraries

As variables representing the service provided by libraries to their users, we have selected three activities: circulation, interlibrary loans, and the average number of days that libraries are open.

The first and third variables are related to student demand, whereas the second variable is related to faculty demand.

3.5.1. Circulation

Figure 8 presents the evolution of the volume of book loans in the 2008-2014 period. The number of loans increased 10.6% up to 2011, when a decline through 2014 started. The final result was a 0.7% reduction in the volume of loans reached in 2014 compared to 2008.

Because this type of loan is used mainly by students, it was considered convenient to relate these results to the evolution of the number of students enrolled in undergraduate courses during the same period. As shown in Figure 9, the evolution of the number of loans follows a similar course with respect to the number of students enrolled, with a maximum number of students in 2011, after which there is a decline of up to 4.8% compared to the year 2008.

3.5.2. Interlibrary loans

For this variable, we collected the total number of loan requests from libraries belonging to REBIUN, in addition to loans requested from libraries not belonging to REBIUN, and loans from foreign institutions. Figure 10 shows the evolution

Figure 6. Evolution of the number of printed monographs and journals acquired by university libraries

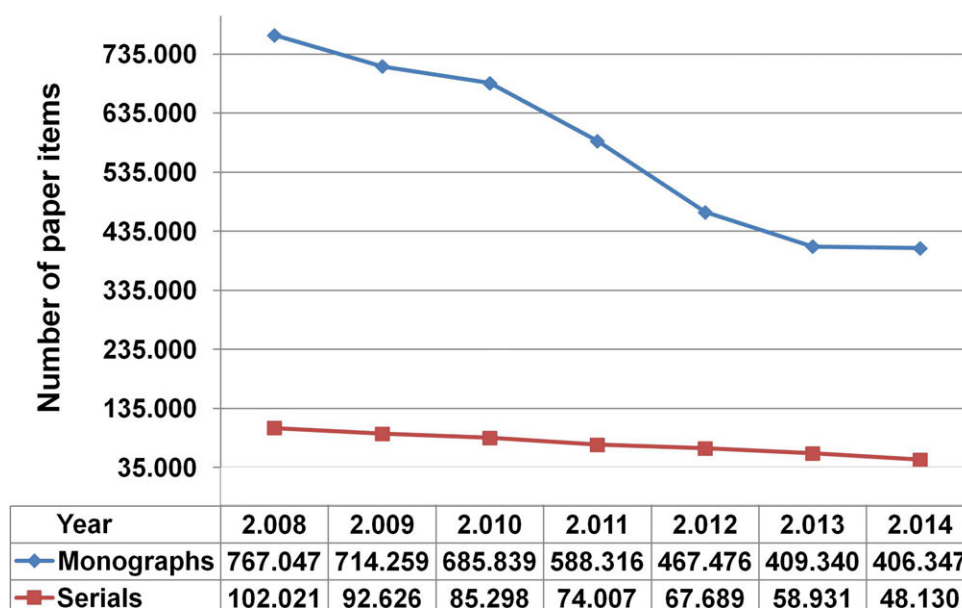


Figure 7. Evolution of electronic format resources purchasing

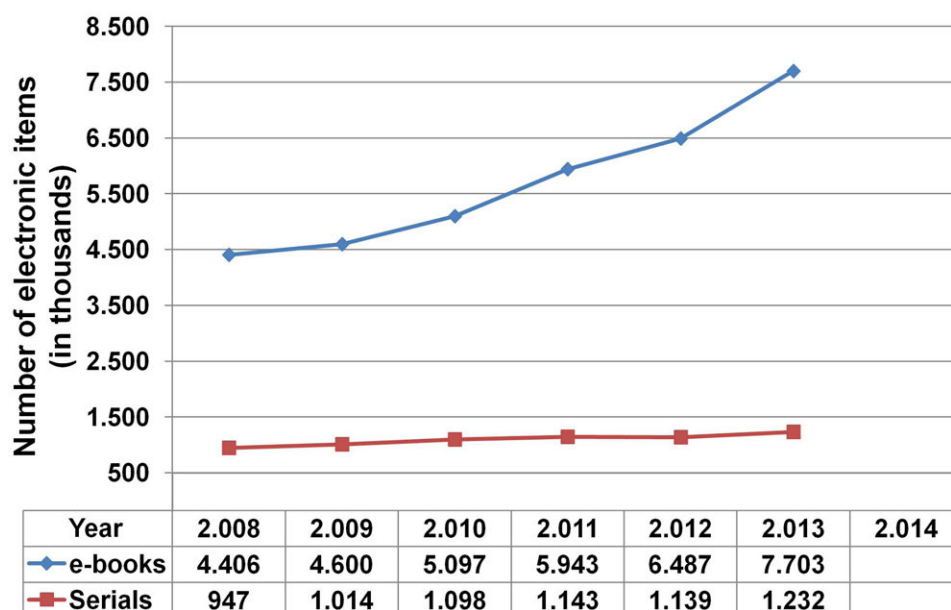
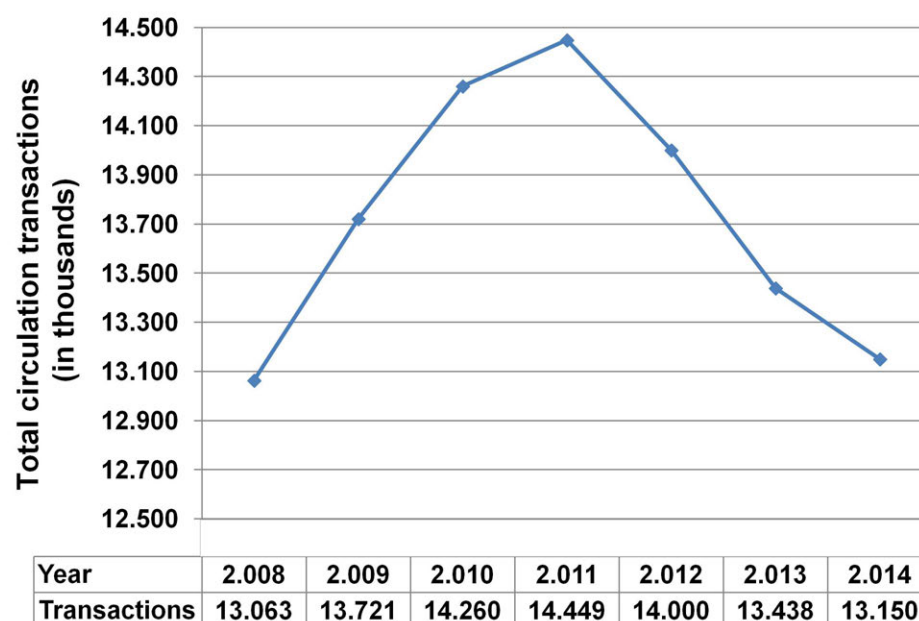


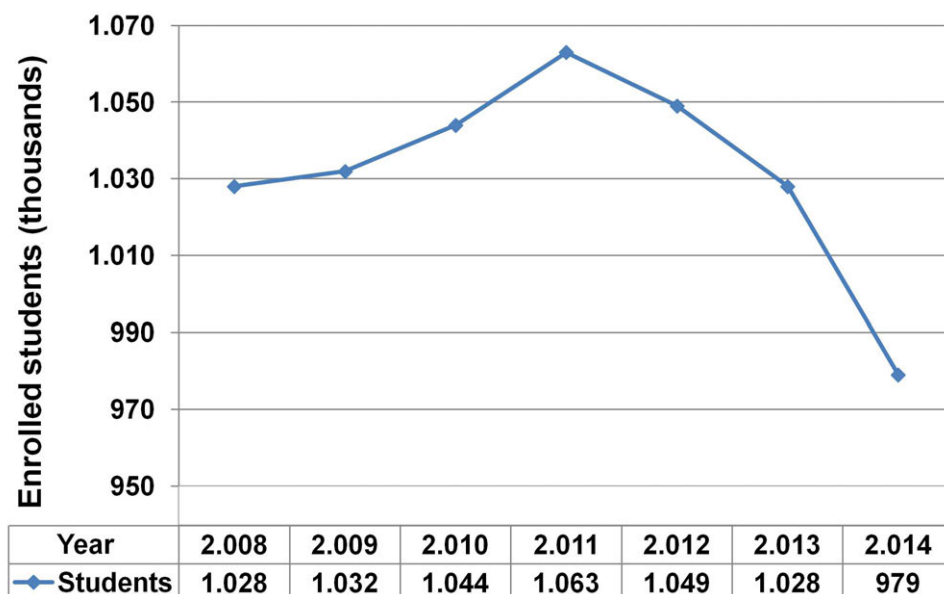
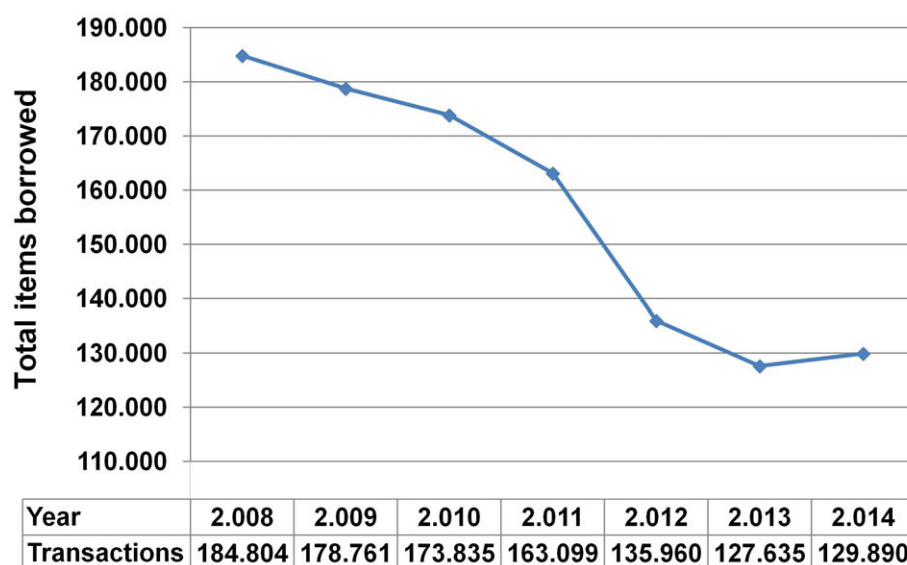
Figure 8. Evolution of book loan



of the number of loan requests for the 2008-2014 period. Evidently, there was a continuous decline in the number of requests, producing a decrease of 29.7% by the year 2014. This decline may be due to the enlargement of the electronic journal collection with direct access to users.

3.5.3 Yearly operation days

Only 38 libraries could be selected to analyze the evolution of this variable. This was due to the libraries' lack of understanding regarding this variable: some libraries provided information corresponding to the type of service that operates

Figure 9. Evolution of the number of students enrolled in undergraduate courses in Spanish public on-site university centers**Figure 10.** Evolution of interlibrary loan requests

the most days during the year, whereas other libraries provided the average number of days that all their services operate. For this study, we have chosen the second option, considering that it better represents the overall effort that libraries make.

Figure 11, which reflects the evolution of this variable, shows that there was a steady reduction in the number of days that libraries were open,

which, in 2014, was 4.05% fewer days of operation than in 2008. The implication is that in 2014, the 38 university libraries remained open an average of 254.8 days per year, whereas in 2008, the average was 267.8 days. Regardless, it must be noted that only 25 of the 38 libraries reduced the number of days that they were open during this period. This 10-day average reduction could be due to, among other causes, closings for holidays such as Easter,

Christmas, and summer vacations, which have been occurring in some universities over the last few years as a way to economize; and as the library at Carlos III University states on page 13 of its 2013 activities report: *"During 2013, the cutback has continued by closing libraries on the weekends and suppressing night shifts during those periods"*.

3.6. Expression of the economic crisis in reports and the strategic planning developed by libraries

There are 20 university libraries with strategy documents in their webpages, of which only 11 have the period comprising the years 2010-2012 as the time when their planning went into effect. Regarding their yearly activity reports, only 25 libraries write such documents, with very uneven contents and to very uneven extents. With the scope of completing our analysis, the strategy documents produced by the consortia and library associations were also analyzed.

In these documents, the following aspects can be identified:

- References to the economic crisis and its impact on the library.
- Strategies or actions developed by libraries to reduce the effects of the economic crisis.

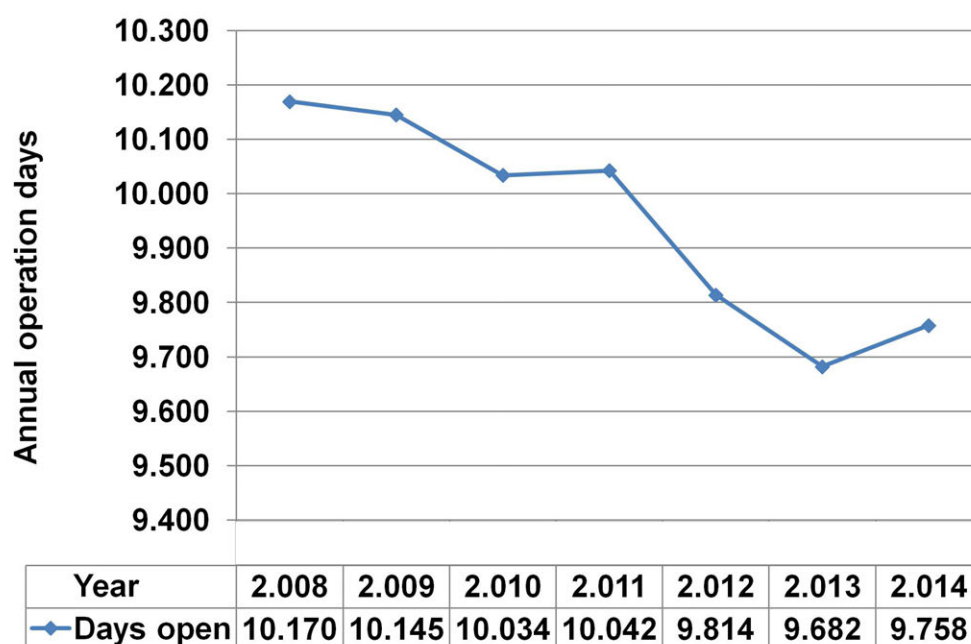
In the 2009 reports written by the Catalanian Library Consortium (Consorcio de Bibliotecas Universitarias de Cataluña - BDC), for the first time

in Spain, here is a clear reference to the fact that an economic crisis will negatively affect Spanish university libraries. For the first time, the idea that the economic sustainability of BDC will be one of the challenges for the future, due to the increase in product prices and the noted crisis, emerges in this document. A year later, two other libraries, those of the University of La Rioja, in its 2010-2015 Management Plan, and Complutense University of Madrid, in its 2010-2013 Strategic Plan, precisely identify the degraded economic scenario as one of the contextual threats. It should be noted as a differential fact that 8 university libraries that, in most cases, initiated their strategic plans in 2012 do not include in detail the topic of the economic crisis, although by that time the effects of the crisis on their funding and on the hiring of staff were evident.

Among the goals that these libraries proposed to achieve and that are included in their strategic planning, the following can be highlighted:

- Attempting to obtain external resources.
- Optimizing collection expenditures by implementing actions toward, on the one hand, evaluating the use patterns of periodic publications, with the aim of adjusting their volume to their actual demands, and, on the other hand, improving purchase processes for bibliographic resources through actions such as creating centralized purchasing, certifying suppliers, or modifying the basis of negotiations with them.

Figure 11. Evolution of yearly library days of operation



- Redirecting collection development through the reduction in subscriptions to printed journals or the purchase of monographs in electronic, instead of printed, format.
- Increasing cooperation among libraries by supporting the creation of library associations and consortia to improve their negotiation capacity against suppliers of information products.
- Improving the work atmosphere, as the University of Valladolid library proposes.

4. CONCLUSIONS

Overall, the Spanish university libraries that belong to public universities began to be aware of the effects of the general economic recession in 2009, although in most, it did not become evident until 2012, the year when their funding was dramatically reduced.

During the long period of economic recession, from 2008 to 2014, libraries suffered a set of negative consequences that, in this study, we have grouped into the following categories: staff, the acquisition of information resources and collection development, and services provided to users.

Regarding staff and similar to what has happened in other countries, in this period, Spain experienced the loss of librarian and assistant positions due to the legal prohibition against filling vacancies. In addition and linked to this issue, it could be determined that libraries suffered a dramatic reduction in the number of students with scholarships as a consequence of cuts to funding, contributing to the loss of buying power of staff due to salary reductions.

The consequences in the domain of information resources purchasing are determined by reductions in budgets assigned to libraries by the universities and, perhaps, by the reduction in contributions from research funds and the centers themselves. Similarly, the consortia have reduced their budgets for electronic resources.

Expenditures on the acquisition of bibliographic materials have fallen more than 28% in constant euros (taking the year 2008 as the base). However, these reductions have not occurred in all libraries but have depended on the Autonomous Communities in which the university is located. The consequences of this decline in funding have had a major effect on the maintenance and development of collections, especially printed material. In light of this situation, managers have taken action by prioritizing the development of electronic

resources, especially electronic periodicals, which are essential for developing university research. However, the impact on students caused by the reduction in the purchase of printed monographs remains unknown. These users have not yet changed their habits toward the use of monographs in electronic format, in addition to the fact that in many disciplines, collections of manuals in electronic format are poorly developed.

With respect to the volume of librarian services rendered during this period, it could be proven that first, the volume of book loans decreased in 2014 compared to 2008. However, the declining trend that started in 2011 should be analyzed to determine its causes. Although the data presented suggest that the cause could be due to a decrease in the number of students, we think that a more detailed study should be conducted, given that also since 2011, a decrease in the purchase of both printed monographs and manuals used by students can be observed. The effect of the electronic support platforms for teaching with the availability of a large volume of information to students should also be analyzed. Second, the declining evolution presented by the volume of interlibrary loan requests during this period could be because researchers have increased their access to the electronic publications acquired by their universities, consortia, or even to the growth of open access publications. Regarding the number of days that libraries are open annually, the reduction produced in this period, although not large, could nevertheless be a trend maintained over time as a consequence of the efficiency programs that universities have implemented since 2011.

The data on the budgets approved by universities in the years 2013 to 2015 suggest that the situation of continuous reduction in university funding may have come to an end. However, macroeconomic data suggest that the funding recovery could be very slow because of, among other factors, the volume of Spanish public debt and the goals for the budget deficit established by the European Union for the coming years. This situation suggests to us a scenario of university funding with small reductions, which means that library managers should design and develop strategies, on the one hand, to mitigate the negative effects of cuts on staff and compensation, the reduction in operational expenditures, and the purchase of information resources and, on the other hand, to maintain the levels and quality of service.

Simultaneously, library managers should address current challenges such as their participation in and maintenance of virtual teaching or internet competition. They should also think about their role,

which, up to this moment, has always been that of facilitating information. At this point in technological development, that role has expanded, producing the power to act proactively with users. Because of the amount of information niches available to work, they should be capable of offering users current and precise information for the generation of high-quality knowledge. Additionally, social networks and the crisis itself have revealed that to achieve efficiency, it is indispensable to cooperate with other entities in the integration of and access to resources, etc.

Ultimately, the consequences of the economic crises have revealed, among other issues, the need for library managers, along with academic authorities, to commence a process of debate on what should be the library mission in this new economic and social environment. They should work on enhancing their capacities for planning, innovation, and cooperation to establish proactive actions to become sustainable and to continue improving the quality of the services rendered to users.

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APPENDIX. Libraries included in this article

Autonomous Communities	Universities libraries
ANDALUCÍA	Universidad de Almería
	Universidad de Cádiz
	Universidad de Córdoba
	Universidad de Granada
	Universidad de Huelva
	Universidad de Jaén
	Universidad de Málaga
	Universidad Pablo de Olavide
	Universidad de Sevilla
ARAGÓN	Universidad de Zaragoza
ASTURIAS	Universidad de Oviedo
CANARIAS	Universidad de La Laguna
	Universidad de Las Palmas de Gran Canaria
CANTABRIA	Universidad de Cantabria
CASTILLA-LA MANCHA	Universidad de Castilla-La Mancha
CASTILLA-LEÓN	Universidad de Burgos
	Universidad de León
	Universidad de Salamanca
	Universidad de Valladolid
CATALUÑA	Universidad de Autónoma de Barcelona
	Universidad de Barcelona
	Universidad de Gerona
	Universidad de Lleida
	Universidad Politécnica de Cataluña
	Universidad Pompeu Fabra
	Universidad Rovira i Virgili
COMUNIDAD VALENCIANA	Universidad de Alicante
	Universidad Jaume I
	Universidad Miguel Hernández
	Universidad Politécnica de Valencia
	Universidad de Valencia
EXTREMADURA	Universidad de Extremadura
GALICIA	Universidad de Coruña
	Universidad de Santiago de Compostela
	Universidad de Vigo
ISLAS BALEARES	Universidad de Las Islas Baleares
LA RIOJA	Universidad de La Rioja
MADRID	Universidad de Alcalá de Henares
	Universidad de Autónoma de Madrid
	Universidad Carlos III
	Universidad de Complutense de Madrid
	Universidad Politécnica de Madrid
	Universidad Rey Juan Carlos

Autonomous Communities	Universities libraries
MURCIA	Universidad de Murcia
	Universidad Politécnica de Cartagena
NAVARRA	Universidad Pública de Navarra
PAÍS VASCO	Universidad del País Vasco